

IN THE CLAIMS

1. (Currently Amended) A digital radiography imager, comprising:
  - a single energy detection layer; and
  - an x-ray converting layer disposed above the single energy detection layer, wherein the single energy detection layer is coupled to receive light from the x-ray converting layer, wherein the x-ray converting layer has a first surface adjacent to the single energy detection layer and a second surface on an opposite side to that of the first surface~~the single energy detection layer~~ and wherein the digital radiography imager is configured such that x-rays traverse the single energy detection layer before propagating through the x-ray converting layer.
2. (Previously Presented) The digital radiography imager of claim 1, wherein an intensity level corresponding to the x-rays received by the imager is greater near the first surface relative to the second surface of the single energy converting layer.
3. (Original) The digital radiography imager of claim 2, wherein the x-ray converting layer comprises a scintillating material to produce visible light from x-rays.
4. (Previously Presented) The digital radiography imager of claim 3, wherein the single energy detection layer comprises photodiodes to detect the visible light.
5. (Original) The digital radiography imager of claim 2, wherein the x-ray converting layer comprises a semiconductor material to draw electrical charges across the semiconductor material.

6. (Original) The digital radiography imager of claim 2, wherein the x-ray converting layer comprises a photoconductor material to produce electrical charges across the semiconductor material.
7. (Previously Presented) The digital radiography imager of claim 5, wherein the single energy detection layer comprises a plurality of charge-collection electrodes to collect the electrical charges.
8. (Previously Presented) The digital radiography imager of claim 1, further comprising a protective layer disposed below the single energy detection layer.
9. (Previously Presented) The digital radiography imager of claim 8, further comprising a substrate layer disposed between the single energy detection layer and the protective layer.
10. (Currently Amended) A flat panel imager, comprising:
  - a photodiode layer;
  - a light transparent layer disposed above the photodiode layer; and
  - a scintillator layer disposed above the light transparent layer,wherein the scintillator layer has a first surface adjacent to the light transparent layer and a second surface on an opposite side to that of the first surface of the light transparent layer, and wherein the flat panel imager is configured such that x-rays traverse the photodiode layer before propagating through the scintillator layer.
11. (Original) The flat panel imager of claim 10, wherein a light intensity generated by the scintillator layer is greater near the first surface of the scintillator layer adjacent to the light transparent layer relative to the second surface of the scintillator layer.

12. (Original) The flat panel imager of claim 11, wherein the photodiode layer comprises a CCD-based sensor.
13. (Original) The flat panel imager of claim 11, wherein the photodiode layer comprises a CMOS-based sensor.
14. (Original) The flat panel imager of claim 11, further comprising a TFT layer disposed below the photodiode layer.
15. (Original) The flat panel imager of claim 10, wherein the scintillator layer comprises a phosphor scintillator.
16. (Original) The flat panel imager of claim 10, wherein the scintillator layer comprises a cesium iodide scintillator.
17. (Original) The flat panel imager of claim 10, wherein a mirror layer is disposed above the scintillator layer.
18. (Original) The flat panel imager of claim 17, wherein a protective layer is disposed below the photodiode layer.
19. (Original) The flat panel imager of claim 18, wherein a substrate layer is disposed between the protective layer and the photodiode layer.
20. (Original) The flat panel imager of claim 19, further comprising a casing that holds the flat panel imager together, wherein the casing forms an aperture window to receive x-rays.
21. (Canceled)

22. (Currently Amended) A flat panel imager, comprising:  
a semiconductor layer disposed above a charge-collection layer; and  
a bias electrode layer disposed above the semiconductor layer, the bias  
electrode to generate an electric field within the semiconductor layer, wherein the  
semiconductor layer has a first surface adjacent to the charge-collection layer and  
a second surface adjacent to the bias electrode, and wherein the flat panel imager  
is configured such that x-rays traverse the charge-collection layer before  
propagating through the semiconductor layer, wherein electric charges drawn  
across the semiconductor layer ~~is-are~~ greater near the first surface of the  
semiconductor layer adjacent to the charge-collection layer relative to the second  
surface of the ~~charge collection~~semiconductor layer.

23. (Previously Presented) The flat panel imager of claim 22, further  
comprising a TFT matrix layer disposed below the charge-collection layer.

24. (Previously Presented) The flat panel imager of claim 22, wherein the  
semiconductor layer comprises an amorphous selenium material.

25. (Previously Presented) The flat panel imager of claim 22, wherein the  
charge-collection layer comprises a plurality of charge-collection electrodes.

26. (Original) The flat panel imager of claim 22, further comprising a casing  
that holds the flat panel imager together, wherein the casing forms an aperture  
window to receive x-rays.

27. (Currently Amended) A digital radiography system, comprising:  
an x-ray source to transmit x-rays;  
a flat panel imager to receive the x-rays and to produce a digitized image,  
comprising:

a photodiode layer;

    a light transparent layer disposed above the photodiode layer;

    a scintillator layer disposed above the light transparent layer; and

    a mirror layer disposed above the scintillator layer; and

    a display system connected to the flat panel imager, the display system to display the digitized image, wherein the scintillating scintillator layer has a first surface adjacent to the light transparent layer and a second surface adjacent to the mirror layer, and wherein the flat panel imager is configured such that x-rays traverse the photodiode layer before propagating through the scintillator layer.

28. (Original) The system of claim 27, wherein a light intensity generated by the scintillator layer is greater near the first surface of the scintillator layer adjacent to the light transparent layer relative to the second surface of the scintillator layer.

29. (Original) The system of claim 27, wherein the photodiode comprises a CCD-based sensor.

30. (Original) The system of claim 27, wherein the photodiode comprises a CMOS-based sensor.

31. (Original) The flat panel imager of claim 27, further comprising a casing that holds the flat panel imager together, wherein the casing forms an aperture window to receive x-rays.

32. (Canceled)

33. (Currently Amended) The system of claim 36, wherein electric charges drawn across the semiconductor layer is greater near the first surface of the semiconductor layer adjacent to the charge-collection layer relative to the second surface ~~of the charge collection layer~~.

34. (Previously Presented) The digital radiography system of claim 36, wherein the flat panel imager is a TFT-based imager.

35. (Previously Presented) The digital radiography system of claim 36, wherein the flat panel imager is a CCD-based imager.

36. (Currently Amended) A digital radiography system, comprising:  
an x-ray source to transmit x-rays;  
a flat panel imager to receive the x-rays and to produce a digitized image,  
comprising:

a semiconductor layer disposed above a charge-collection layer;

and

a bias electrode layer disposed above the semiconductor layer, the bias electrode to generate an electric field within the semiconductor layer;  
and

a casing that holds the flat panel imager together, wherein the casing forms an aperture window to receive the x-rays; and

a display system connected to the flat panel imager, the display system to display the digitized image, wherein the semiconductor layer has a first surface adjacent to the charge-collection layer and a second surface adjacent to the bias electrode, and wherein the flat panel imager is configured such that x-rays traverse the charge-collection layer before propagating through the semiconductor layer.

37. (Previously Presented) An imaging method, comprising:  
transmitting x-rays through a single photosensitive device layer; and  
receiving the x-rays incident on a scintillator layer after the transmission  
through the single photosensitive device layer.

38. (Previously Presented) The method of claim 37, wherein the scintillator  
layer is disposed above the single photosensitive layer, the scintillator layer  
having a first surface adjacent to the single photosensitive device layer and a  
second surface farther away from the single photosensitive device layer relative to  
the first surface, and wherein receiving further comprises receiving the x-rays at  
the first surface of the scintillator layer before the x-rays propagate through the  
scintillator layer.

39. (Previously Presented) The method of claim 38, wherein receiving further  
comprises generating a greater light intensity near the first surface of the  
scintillator layer adjacent to the single photosensitive device layer relative to the  
second surface of the scintillator layer.

40. (Previously Presented) The method of claim 39, further comprising  
detecting by the single photosensitive device layer visible light generated from the  
scintillator layer.

41. (Original) The method of claim 40, wherein a mirror layer is disposed  
adjacent to the second surface of the scintillator layer.

42. (Original) The method of claim 41, wherein a substrate layer is disposed  
below the photosensitive layer.

43. (Original) The method of claim 42, wherein a protective layer is disposed  
below the substrate layer.

44. (Previously Presented) An imaging method, comprising:  
transmitting x-rays through a single charge collection-layer; and  
receiving the x-rays incident on a semiconductor layer after the  
transmission through the single charge-collection layer.

45. (Previously Presented) The method of claim 44, wherein the  
semiconductor layer is disposed above the single charge-collection layer, the  
semiconductor layer having a first surface adjacent to the single charge-collection  
layer and a second surface farther away from the single charge-collection layer  
relative to the first surface, and wherein receiving further comprises receiving the  
x-rays at the first surface of the semiconductor layer before the x-rays propagate  
through the semiconductor layer.

46. (Previously Presented) The method of claim 45, further comprising  
generating an electrical field within the semiconductor layer.

47. (Previously Presented) The method of claim 46, wherein receiving further  
comprises generating a greater electrical charge near the first surface of the  
semiconductor layer adjacent to the single charge-collection layer relative to the  
second surface of the semiconductor layer.

48. (Previously Presented) The method of claim 47, further comprising  
detecting by the single charge-collection layer electrical charges drawn across the  
semiconductor layer.

49. (Original) The method of claim 48, wherein a mirror layer is disposed  
above the semiconductor layer.

50. (Previously Presented) The method of claim 49, wherein a protective layer  
is disposed below the single charge-collection layer.

51. (Currently Amended) A digital radiography imager, comprising:  
an energy detection layer;  
an x-ray converting layer coupled to the energy detection layer; and  
a single energy detection/x-ray converting interface in the imager, wherein  
the x-ray converting layer has a first surface adjacent to the energy detection layer  
and a second surface on an opposite side to that of the first surface ~~the energy~~  
~~detection layer~~ and wherein the digital radiography imager is configured such that  
x-rays traverse the energy detection layer and the single energy detection/x-ray  
converting interface before propagating through the x-ray converting layer.

52. (Currently Amended) A method, comprising:  
receiving x-rays in a scintillator layer; and  
transmitting the x-rays through a photosensitive device before the x-rays  
are received in any scintillator layer.

53. (New) A digital radiography imager, comprising:  
an energy detection layer; and  
a substrate comprising an x-ray converting layer, the substrate coupled to  
the energy detection layer, wherein the energy detection layer is coupled to receive  
light from the x-ray converting layer, wherein the digital radiography imager is  
configured such that x-rays traverse the energy detection layer before propagating  
through the substrate comprising the x-ray converting layer.

54. (New) The digital radiography imager of claim 53, wherein the x-ray  
converting layer comprises a scintillating material to produce visible light from x-  
rays.

55. (New) The digital radiography imager of claim 53, wherein the energy detection layer comprises photodiodes to detect the visible light.

56. (New) The digital radiography imager of claim 53, wherein the x-ray converting layer comprises a semiconductor material to draw electrical charges across the semiconductor material.

57. (New) The digital radiography imager of claim 53, wherein the x-ray converting layer comprises a photoconductor material to produce electrical charges across the semiconductor material.

58. (New) The digital radiography imager of claim 53, wherein the energy detection layer comprises a plurality of charge-collection electrodes to collect the electrical charges.

59. (New) A method, comprising:  
providing a substrate;  
receiving x-rays in an x-ray converting layer; and  
transmitting the x-rays through an energy detection layer before the x-rays are received in the x-ray converting layer and before the x-rays are received in the substrate.

60. (New) The method of claim 59, wherein the x-ray converting layer comprises the substrate.

61. (New) The method of claim 60, wherein the x-ray converting layer further comprises a scintillating material to produce visible light from x-rays.

62. (New) The method of claim 60, wherein the energy detection layer further comprises photodiodes to detect the visible light.

63. (New) The method of claim 60, wherein the x-ray converting layer further comprises a semiconductor material to draw electrical charges across the semiconductor material.

64. (New) The method of claim 60, wherein the x-ray converting layer further comprises a photoconductor material to produce electrical charges across the semiconductor material.

65. (New) The method of claim 60, wherein the energy detection layer further comprises a plurality of charge-collection electrodes to collect the electrical charges.